

Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	6 JUNE 2025
Team ID	LTVIP2025TMID52391
Project Name	Visualizing Housing Market Trends: An Analysis of Sale Prices and Features using Tableau
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Example: Visualizing Housing Market Trends: An Analysis of Sale Prices and Features using Tableau

Reference: <https://developer.ibm.com/patterns/ai-powered-backend-system-for-order-processing-during-pandemics/>

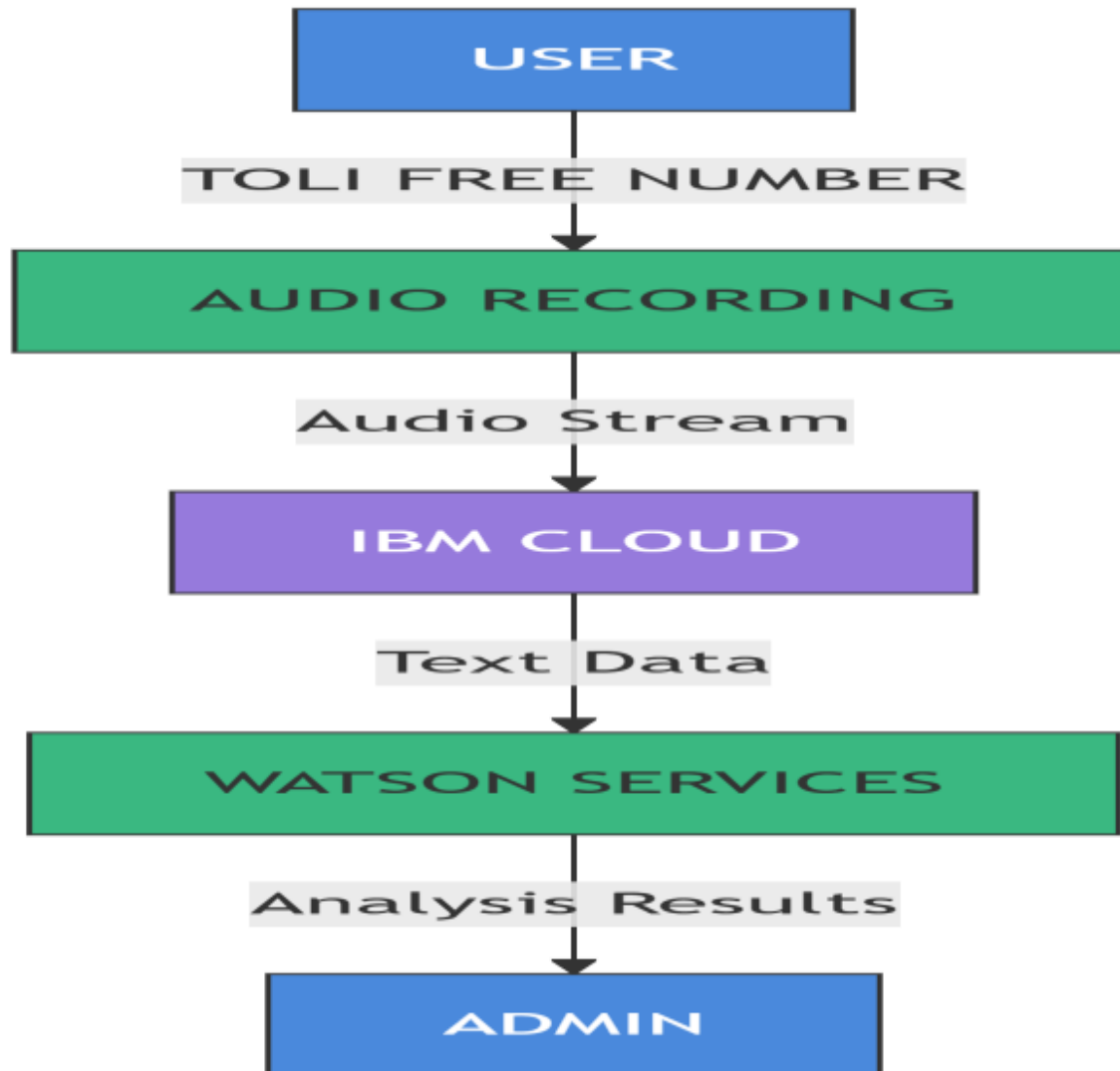


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1	User Interface	Web dashboard for buyers/sellers/agents	React.js + D3.js/Tableau Embedded
2	Application Logic-1	Data ingestion & preprocessing (CSV/PDF/API)	Python (Pandas, Apache Tika)
3	Application Logic-2	Market trend analysis (YoY changes, heatmaps)	IBM Watson Studio (Python notebooks)
4	Application Logic-3	Valuation model automation	IBM Watson ML
5	Database	Property listings, user preferences	PostgreSQL
6	Cloud Database	Historical sales data repository	IBM Db2 on Cloud
7	File Storage	Raw PDF deeds, image scans	IBM Cloud Object Storage
8	External API-1	Government housing data (FHFA, Zillow)	REST APIs (JSON)
9	External API-2	Mortgage rate feeds (Federal Reserve)	SOAP/XML
10	Machine Learning Model	Price prediction model (neighborhood-level)	Scikit-learn + Watson AutoAI
11	Infrastructure	Hybrid deployment (local dev + cloud scale)	Kubernetes (IBM Cloud) + Local Docker

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Data processing & visualization	Pandas, Apache Tika, D3.js
2	Security Implementations	GDPR-compliant data handling	OAuth 2.0, AES-256, IAM (IBM Cloud)
3	Scalable Architecture	Microservices for ingestion/analysis/UI	Kubernetes + Istio
4	Availability	Multi-zone deployment with auto-scaling	IBM Cloud Load Balancer
5	Performance	Cached trend results, CDN for static assets	Redis, Akamai CDN

References:

<https://c4model.com/>

<https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/>

<https://www.ibm.com/cloud/architecture>

<https://aws.amazon.com/architecture>

<https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d>